



National Institute of Standards and Technology

SPECIFICATIONS DOCUMENT

Three (3) Electro-Optical Phase Modulators

BACKGROUND

The Optical Frequency Group at the National Institute of Standards and Technology (NIST) is conducting research and development of optical atomic clocks and highly-frequency-stabilized laser sources.

PURPOSE

These electro-optical phase modulators will be used in Pound-Drevel-Hall frequency stabilization of lasers in the operation of Ytterbium optical lattice clocks.

DELIVERABLES

The contractor shall deliver three (3) Electro-optical phase modulators.

TECHNICAL SPECIFICATIONS

- Optical wavelength: 759 nm, 1156 nm, 1388 nm.
- Insertion losses: less than 4.0 dB
- Half-wave voltage: less than 5.0 V
- Bandwidth: larger than 1 GHz (DC to > 1 GHz)
- Electric connections separated for RF (50 Ohm input impedance) and DC bias (DC to 100 kHz, high input impedance)
- Input and output fibers: polarization maintaining, length 1m
- Fiber connectors: FC/APC

TECHNICAL CONSIDERATIONS

Waveguide electro-optical modulators are the only technology that can meet the bandwidth and the half-wave voltage requirements. Among those devices, discriminant requirements are:

- Optical wavelength: 759 nm, 1156 nm, 1388 nm.
- Insertion losses: less than 4.0 dB
- Half-wave voltage: less than 5.0 V
- Bandwidth: larger than 1 GHz (DC to > 1 GHz)
- Electric connections separated for RF (50 Ohm input impedance) and DC bias (DC to 100 kHz, high input impedance)

GOVERNMENT FURNISHED PROPERTY OR INFORMATION

N/A

DELIVERABLE SCHEDULE

The contractor shall deliver no later than twelve (12) weeks after receipt of order.

INSPECTION AND ACCEPTANCE

Inspection of merchandise upon receipt. These three (3) Electro-optical phase modulators shall perform according to specifications (above) to be considered for acceptance.